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THE PUPIL IN HEALTH AND DISEASE

BY

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The pupil is a circular opening in the centre of a diaphragm, the iris. This diaphragm serves the double purpose of shutting off excess of light from the eye and of cutting off the marginal rays. To suit these two functions under varying conditions, the pupil is alterable in its size. This alteration is effected by means of two muscles :—the sphincter pupillae and the dilatator pupillae.

The sphincter pupillae is a small circular muscle surrounding the pupil and lying between the anterior and posterior layers of the iris. It is supplied by the third or oculo motor nerve, stimulation of which causes contraction of the pupil.

The dilatator pupillae is an epithelial muscle. Its fibres consist of the anterior non-pigmented ends of the posterior layer of cells of the iris near its base, the posterior ends of which remain as cells. Its nerve supply is from the sympathetic, originating from the Cilio-spinal centre of the spinal cord. Irritation of the sympathetic causes dilatation of the pupil.

The nucleus of the third nerve from which the sphincter is supplied lies on the floor of the aqueduct of Sylvius. It is probable that the fibres of supply originate from the anterior and median part of the nucleus. The nuclei of either side lie close together in the median line and association fibres connect them together. Hence the bilateral aspect of accommodation and contraction of pupil.

The sympathetic centre takes origin from the Cilio-spinal centre of Budge. It lies at the level of the 7th cervical and 1st dorsal nerves. Fibres

pass through the cervical sympathetic to the superior cervical ganglion and thence pass in the carotid plexus. From here fibres pass on to the ciliary ganglion and also through the nasal nerve.

The ciliary ganglion is a centre in the path of the cerebro-spinal and and sympathetic branches. It lies external to the optic nerve near the commencement of its posterior third. It receives three branches and sends out 12 to 15 branches the short ciliary nerves.

The centres for control of the movements of the iris lie in the occipital lobe and at the foot of the second frontal convolution.

The normal pupil is more or less circular. It is sometimes slightly oval with the long axis vertical. It is generally eccentrically placed. Its diameter varies from 2 to 5 mm. depending on the individual, his age, and conditions of light.

In new born infants the pupil is very markedly contracted: Later it becomes larger reaching its maximum between the ages of 5 and 25. Thereafter it gradually decreases in size till about 50. In old age it is very small and its reactions are sluggish due to rigidity of the iris tissue and of the sphincter. During natural sleep it is strongly contracted. Just before death the pupil contracts, as during sleep. The condition of refraction of the eye influences its size to some extent. It is large in myopes and small in hyperopes. In nervous or excitable subjects it is large. Inequality in the size of the two pupils is usually a pathological condition but it may occasionally be congenital. Vascular changes may produce modification in the size of the pupil.

Changes in the pupil are brought about by the action of the two muscles. The Sphincter pupillae causes contraction. Where the contraction is due to the action of light it has all the characteristics of a true reflex. It is quick, involuntary, irresistable and unconscious. Often it oversteps the mark and causes a few oscillations before it settles down.

When the contraction is associated with accommodation and convergence it loses the character of a pure reflex. It is much slower and has the character of an associated movement.

Dilatator pupillae by its contraction causes dilatation of pupil. Its action is facilitated by an inhibition of its antagonist. The sympathetic controls its action. If the sympathetic is cut the pupil contracts.

Constriction of the pupil is effected by impulses from the constrictor centre which lies between the muscles of the third pair. It is anatomically a double centre but functionally a single one for each centre has both the pupils under its control.

Dilatation of the pupil involves three different arcs, an orbital arc with the ciliary ganglion as the centre, a basilar arc with the cilio-spinal region of Budge as the centre and a cortical arc, the centre for which is located in the occipital cortex.

Examination of the pupil is conducted in its static as well as its dynamic states.

In the static state one notes the form of the pupil, its dimensions, regularity of circumference, and the size of the two pupils. Inequality of the two pupils is known as Anisocoria. It is best examined in a dark room under feeble illumination. About 15% of people show an inequality.

In the dynamic state one notes the pupillary reflexes, the most important of which is the *Light Reflex* when light is flashed into the eye the pupil contracts, and conversely when the intensity of the light is diminished the pupil dilates. It is the intensity of light that determines the width of the pupil. All parts of the retina are not equally excitable. Excitation of the peripheral zone causes only a weak contraction. The most energetic contraction occurs when light falls on the fovea. Light reflex is very quick and takes from $\frac{1}{4}$—$\frac{1}{3}$ of a second. Reflex to coloured light is very feeble. Light reflex is of importance in that it enables us to detect cases of amblyopia or retinal disease.

(2) Another reaction to light is that known as *consensual reaction.* When light falls on one eye, the pupil of the other eye also contracts. This reaction is due to the connections of the two nerves at their nucleus as well as to the partial decussation at the chiasma.

(3) A third reflex is that to *convergence and accommodation.* The pupil contracts when the eyes are converging and accommodating. According to some observers the contraction is associated with convergence only. There are numerous other reactions of less importance.

(1) *Paradoxical Reaction.* A rare condition in which the pupil dilates under luminous excitation.

(2) *Palpebral reaction.* A forcible contraction of the lid muscle causes a contraction of the pupil and when the lids are re-opened sudden dilatation takes place.

(3) *Psychic Pupillary reflex.* The pupil dilates under the influence of grief, pain, fright etc.

(4) *Haab's Cortical reflex.* If one's attention is fixed on a dull dark background and a white object is brought into the periphery of one's vision the pupil contracts even though the eye is fixed in front.

(5) *Cutaneous reaction.* A reflex dilatation occurs under the influence of tactile or thermic excitation of skin, conjunctiva or cornea. The reaction is slow to appear.

(6) *Peripheral or Mechanical reflex.* Direct excitation or massage through the lid or cornea causes contraction of the pupil.

(7) *Tournay's Reaction.* This was first discovered and reported by Dr. Tourney in 1917. He found that when a person looks to his extreme right or left by moving his eyes into the lateral position the pupil of the abducted eye becomes dilated. This is a constant normal reaction. Along with this one finds that the pupil of the adducted eye contracts slightly. Thus a condition of Anisocoria is produced. In certain chronic nervous diseases it has been found to be abolished. But the pathological significance of its disappearance has not yet been determined.

Certain drugs cause dilatation of the pupil. Others cause contraction. Those which cause dilatation or the mydriatics are : Homatropin, atropine, Duboisine, Scopalamine, cocaine etc. Among those which produce contraction are Eserine and Pilocarpine.

Pathological modifications in the diamater and the movements of the Pupil:—There are 3 important modifications :—Mydriasis, or dilatation of the pupil, miosis or contraction of the pupil, and anisocoria or inequality.

Mydriasis. From a clinical point of view it may be considered under 3 headings :—

(*a*) *Bilateral mydriasis with blindness* :—This condition is due to a bilateral lesion of the peripheral sensory apparatus, that is, any lesion that causes an absolute loss of vision. Both direct and consensual reflexes are absent in such cases.

(*b*) *Mydriasis with more or less conservation of vision* :—This is observed in cases where the nucleus of the 3rd nerve is affected. Such condi-

tions are acute meningitis, meningial haemorrhages, and abscess of the brain. Acute intoxications seem to have a selective action on the pupil. In chloroform anaesthesia the pupil dilates at first, later it contracts, later still it dilates again.

In botulism mydriasis is seen.

It may appear as a post-diplitheritic complication. Alkaloids such as atropine, etc. cause dilatation.

(c) *Unilateral mydriasis.* This is observed in contusions and traumatisms of the eye. It may occur alone or associated with loss of accommodations. The dilatation is variable, usually oval or pear shaped. Fractures at the base, tumours and inflammations in the orbit may also cause mydriasis. Syphilis is one of the chief causes of unilateral mydriasis. It may then occur with or without paralysis of accommodation. In encephalitis lethargica one may find unilateral paralysis. It may also occur in hysteria.

Miosis. During sleep miosis is a normal condition. Chief causes of miosis are :—(*a*) Lesions of the Globe, (*b*) General auto-intoxications and (*c*) Chronic general affections.

Lesions of the globe causing miosis generally produce unilateral contraction.

General acute intoxications cause bilateral miosis. It is markedly seen in cases of poisoning from opium, morphine, chloral, alcohol and in uraemia.

Many chronic general affections cause miosis. The chief of such affections is syphilis. It is most commonly seen in tabes and in general paralysis. This miosis resists all mydriatics. In tabes even if the eye is blind miosis may persist. Miosis is also seen in meningitis and in multiple sclerosis. Lesions to the sympathetic at its centres of origin or in its conducting paths cause miosis. Such condition are tumours in the neck, pleurisy, certain pulmonary lesions, etc.

Anisocoria may be a physiologic condition, congenital or otherwise. Usually it is of pathologic significance. Those conditions in which mydriasis or miosis is produced in one eye necessarily produces anisocoria. Here again syphilis plays a leading part. It is most frequent in general paralysis, about 50 per cent of all cases. Next comes tabes. Multiple sclerosis, meningitis, haemorrhages, etc. also rarely cause this condition. In affections of the pleura

and lung it is frequently seen. Pulmonary tuberculosis, pleurisy with effusion and pneumonia especially at apex produces anisocoria. According to one observer mydriasis with slight exophthalmos and enlargement of palpebral fissure is a very frequent sign in those subjects who are likely to develop pulmonary tuberculosis. Pleurisy with effusion shows a slight mydriasis on the side affected, in many cases. Apical pneumonia often shows a mydriasis on the corresponding side.

One should note *irregularity of the pupil.* This may be due to iritis or to some other condition. In Tabes the pupil is often oval especially obliquely oval.

PATHOLOGICAL CHANGES IN THE REFLEXES OF THE PUPIL.

(1) *Modifications of light reflex.* The light reflex is an extremely sensitive reflex. Changes in it may occur under 3 conditions (*a*) Lesions of the sensory or centripetal path (*b*) Lesions of the motor or centifugal path (*c*) Lesions of the arc between them.

(*a*) *Lesions of the centripetal* paths are always peripheral and accompanied by visual troubles. Such are changes in the retina or optic nerve. The light reflex in these cases may be diminished or completely abolished. Consensual reaction is always present.

(*b*) *Interruption of the reflex arc.* In these cases vision is preserved. The centripetal and centrifugal paths are intact and hence the motility of the sphincter is good, for the pupil reacts to accommodation and convergence. Consensual reaction is lost.

These lesions are almost always bilateral. The abolition of the light reflex both direct and indirect, and the preservation of the convergence and accommodation reflex gives us the Syndrome known as Argyll Robertson pupil. It is only seen in cerebral or medullary affections. The diagnostic significance of Argyll Robertson pupil is great. It is an almost certain sign of previous syphilis. It is present in about 80 per cent of Tabes and in about 47 per cent of general paralysis. In the latter one sees a progressive internal ophthalmoplegia. A simple mydriasis is seen at first : later a paresis followed by a paralysis of light reflex and lastly a paralysis of the accommodative reflex.

Argyll Robertson pupil is rare in nonsyphilitic central lesions : It may be seen in syringomyelia, cerebro-spinal meningitis, encephalitis lethargica etc.

Alterations in the motor or centrifugal paths. This is due to a partial or complete paralysis of 3rd nerve originating at its nuclear level or in its branches or terminations In all these cases the immobility of the pupil is absolute, reflexes being abolished to light and to convergence. Consensual reaction is absent on the injured side.

(2) *Modifications of the consensual reflex.* Four groups of cases may be considered under this head :

(*i*) The consensual reaction is normal on both sides. If now one eye is blind we can conclude that it is a case of functional origin.

(*ii*) Loss of light reflex on one side with persistence of consensual reflex by illuminating the same eye : On the contrary consensual reflex is absent when the other eye is excited. Such cases are due to lesion in the motor fibres of the sphincter from their nuclei of origin to their termination.

(*iii*) absence of light reflex of one eye with absence of consensual reflex by excitation of same eye. Light reflex and consensual reflex by excitation of the other eye are present. Such cases are due to lesions of the optic nerve or of the retina.

(*iv*) Suppression of all consensual reflex whichever eye is excited.

(3) *Hemianopic Pupillary Reaction* also known as Wernick's reaction. This is seen in cases of lesions of the optic tracts in front of the external geniculate Body. In these cases one half of the visual field in each eye is lost. If a very fine ray of light is projected to the functioning half of the retina the pupil contracts but the blind half does not cause any reflex. This is rather a difficult sign to demonstrate.

(4) *Modification of the reflex to accommodation and convergence.*—Loss of this reflex is not so frequently observed as that of light reflex. Generally they occur together. Occasionally the light reflex is present but convergence reflex is abolished. We then get what is known as Inverse Argyll Robertson sign. This condition is uncommon but may be seen in General Paresis and in Dementia Praecox.

(5) *Paradoxical pupillary reflex.*—This condition may be seen in Tabetics or Paretics. The accommodation reflex is normal but pupil shows an inverse reaction to light.

The study of the pupillary changes is of value in a great many diseases. A few of these may be mentioned :—

(1) *General paralysis.*—In the early stage we occasionally see an inequality or irregularity of the pupil: or a condition of alternating

mydriasis. The pupils may be equal between the periods of inequality but may be contracted or dilated. The shape of the pupil may also be altered. It may assume an obliquely oval form.

Argyll Robertson pupil is present in about 50 per cent of cases. It is always bilateral. A. R. sign is really one stage in a progressive bilateral internal ophthalmoplegia and always advances in one eye slightly quicker than in the other. Sometimes an inverse A. R. sign is seen.

In about 85 per cent of cases some pupillary changes are seen : hence a careful examination should always be made.

(2) *Multiple sclerosis.*—In this disease the pupil is often contracted. The reflexes are preserved but may often be exaggerated.

(3) *Tabes.*—Pupillary changes are frequent in Tabes and their *early* appearance is of great value. Miosis is very frequent. The pupil is generally extremely contracted. Inequality of the pupils is also of great frequency. The shape of the pupil is often obliquely oval. Argyll Robertson sign is very frequent. Once present it always persists. Many other pupillary changes have also to be noted occasionally. With all these pupillary changes an atrophy of the iris is also present giving the patient a dull fixed appearance.

(4) In *Hysteria* mydriasis is often present, but may be only in one eye causing anisocoria. Light reflex is always present even if the eye is blind. The contractions to light reflex are often jerky.

(5) *Pneumonia*—a unilateral mydriasis has long been noticed on the side of the affection. It is much more frequent in apical cases. Often it may be present on both sides but more pronounced on the side affected. One observer considers that mydriasis is generally present only in those cases which recover. In those cases which end in death it is generally absent.

Pulmonary Tuberculosis.—In the early stages a bilateral mydriasis has been observed in some cases. In confirmed cases a mydriasis of one side or more marked on one side has been noted. This is known as Roque's sign. This is due to irritation of the sympathetic by the dome of the pleura and the apex of the lung.

Mydriasis is present even when the apex is not affected.

This sign is of great value in the early diagnosis of pulmonary tuberculosis because at a time when the lung itself has not shown any destructive changes the glands are involved and cause irritation of the sympathetic and consequent pupillary changes.

TREATMENT OF FEVERS

BY

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(being a continuation of the article which appeared in this Journal a few weeks ago, under the same caption.)

The writer has had a few postal communications asking for greater detail on this subject of hydrotherapy. The requests appear to have come mostly from colleagues who are practising in "the back—of—the—beyond—parts" of our country wherein nursing facilities are rarely or never available. While cheerfully acquiescing to the requests, he wishes to caution them against accepting the figures detailed hereunder as being strictly correct. The best that can be said in favour of them is that every effort has been made to make them useful and practical.

To begin with, some notion regarding their nature and time consumed by each of them is necessary to offer any remark

Cold bath	temperature	varying	from	40° to 60°F
Cool bath	,,	,,	,,	65° to 75°F
Tepid bath	,,	,,	,,	85° to 95°F
Warm bath	,,	,,	,,	95° to 100°F
Hot bath	,,	,,	,,	100° to 110°F
Very hot	,,	,,	,,	110° to 120°F

Very hot baths have a definite place in allopathic treatment, though in a very limited way.

Cold Sponging:—Patient is completely undressed and is made to lie over a blanket. Another blanket covers him all over, face alone being left uncovered. A hot water bottle is kept under the feet. Sponging commences over the face first and then progresses downwards. Temperature of water in tepid sponging is usually 85°F. But consistent with the constitutional condition of the patient, the temperature of water for sponging may be lowered, but it is very unwise to reduce it to 65°. Control over the temperature of the patient and his pulse is absolutely essential. Not infrequently a cyanotic

look of the patient may warn the veriest tiro that he should cry halt and take his stand on the line of safety. At times the subjective symptoms of the patient may become manifest far earlier than the appearance of objective signs.

These cases are even easier to handle provided the possibility is borne in mind and the condition is recognized early. The duration of sponging should rarely exceed fifteen minutes. At any rate if nothing good has occurred within this time, it is unlikely that anything else is likely to show up by waiting for it. On the other hand, peripheral circulatory failure or respiratory failure may have to be apprehended.

The importance of iced enema as a life saviour in some cases of thermal crises has already been referred to in the previous article. The technique, though simple, should not be undertaken in a light hearted manner. Choice of the case is equally important—Enfeebled individuals, senile cases, marantic cases, highly toxic cases, etc. withstand the treatment very poorly. Speed has no place here. Cardiac stimulants are to be kept handy. About half to one pint of water at 75°F should be run in with the waterhead at 2 feet above the nozzle [The can, the tubings, the nozzle etc. should be perfectly clean.]

Slowly run in pieces of ice till the temperature is between 55 to 60°. The total volume of fluid should be less than two pints. A close watch is needed upon the reaction. Such a procedure may result in cyanosis (watch the nails, the coldness of extremeties, free, hard breathing etc). As the temperature continues to fall even after the enema is stopped, it is best to take the enema off when the temperature is still about 100°F. At times, it may be necessary to stop the enema when the temperature is just getting down 2½° below the figure at the start. However, the patient's own feelings or his appearance are to be deemed as valuable findings.

There are times, when a very stiff and high temperature, not only defies the efforts of the medical attendants, but also indicates that certain dissolution is impending, "cold effusion" may be resorted to. The process consists in placing a large mackintosh over which the patient lies. A single sheet is used in covering the patient. Abundant amount of water (at first 70 to 80°) is poured in abundance. Slowly and slowly, the temperatures of the water used, is reduced till even 40 to 50° can be used without any shock being induced. By keeping the head and neck a little higher and by other judicious measures, it can be made possible to let the water flow away to wide receptacles kept on the floor at the outflow of water from the bed. On the

whole, it is a bold measure useful when alarming rises of temperature to 106° or so is present.

There is a class of medical men who look for trouble in every work of theirs. To their satisfaction, it may be said that a small dose of brandy or a cup of soup, of any kind given before, during or after may avert any disaster.

Students of Hydrotherapy learn a good few more means of reducing the thermal rise. Suffice it to say that lower grades of rises of temperature need no reduction, but, when hyperpyrexia demands urgent reduction the application of hydrotherapy should be the first concern of the medical attendant. No successful issue is to be expected if the above move is undertaken with a fickle heart and a faithless mind.

In passing, it may be mentioned a system of continuous bath of tepid water for over a few days has its advocates—the labour involved and the eternal vigil that is needed are sufficient grounds to rule out even the suggestion.

Contra-indications for hydrotherapy are practically nil; the undue delay in its introduction, a hopelessly poor diet under a mistaken notion that all fevers need low caloric diet, the severity or the chronicity that sometimes beset the illness are occasional factors that may militate against hydrotherapy. On the other hand, hydrotherapy has a wonderful effect upon the sensorium (a sedative effect that counterbalances all the minor troubles undertaken in the form of therapy). At best in a few cases, the course of the illness has been materially cut down and the complications are reduced to the minimum.

(*To be continued*)

NOTES ON PUBLIC HEALTH.

(Issued by the Principal Information Officer, Government of India)

DIGITALIS PREPARATIONS SOLD IN INDIA BELOW PAR IN QUALITY.

Biochemical Laboratory Finding : Need for Control.

That a large proportion of Digitalis preparations sold in India is below par in quality, is a recent finding of the Biochemical Standardization Laboratory, Calcutta, which, since its inception nearly two years ago, has been making an all-India survey of the quality of medicinal preparations for which definite and recognised standards of comparison are available.

In the interests of patients for whom Digitalis is prescribed and of scientific medical practice, it seems imperative that some form of control should be exercised by the State over drugs like Digitalis, says the Laboratory.

All Digitalis preparations issued for sale, it is suggested, should be tested and their potency controlled before they are released into market. Strict precaution should be enjoined regarding their storage in cool and dark places, preferably in cold storage where possible. All Digitalis tinctures more than a year old should be re-tested for their potency, and if found below par immediately withdrawn from clinical use.

Difference between Life and Death.

One of the most important remedies in Pharmacopoeia, Digitalis has long been the mainstay of the physicians in the treatment of heart disease. It gives striking results in a condition of heart failure known as 'auricular fibrillation', definite improvement is known to occur also in many types of chronic dilatation and congestion of the heart. Digitalis in the form of tincture or infusion is widely used by medical men and a Digitalis tincture of inferior quality and defective strength may mean in some cases all the difference between the life and death of the patient.

The reasons why Digitalis preparations sold in India have been found to be below par in quality are not clearly understood yet. A good deal of research has been carried out both in India and abroad regarding the stability of Digitalis preparations, and it is now generally recognized that the glucosides of Digitalis, on which its clinical activity depends, deteriorate at a fairly rapid rate when stored in a high temperature. Not unnaturally, therefore,

the hot and humid climate of India may bring about a rapid deterioration of all Digitalis preparations, both locally made or imported from abroad.

REPRESENTATIVE SURVEY

The survey on which the Biochemical Standardization Laboratory bases its conclusion, may be said to be fairly representative of the conditions existing in India. For the purpose of analyses, samples were obtained from practically all the Provinces in British India. Altogether 110 samples were analysed biologically up to the end of 1938. These consisted of 102 Digitalis tinctures, 4 dried leaves of Digitalis and 4 Digitalis Powders.

Of this number, as many as 87 (79.1 per cent) were found to be below 80 per cent in strength compared to the International Standard Digitalis tincture and 57 were below 50 per cent potency.

One hundred and two samples in this group were of Indian origin as was evident from the labels on the containers and only 8 of foreign make. It is not known whether the Digitalis tinctures with Indian labels were prepared from Digitalis leaf grown in India or from Digitalis leaf imported from outside.

The standardization of the preparations was carried out according to the 'Intravenous Cat Method' mentioned in the British Pharmacopoeia, 1932 (Appendix). The technical details suggested therein were followed with scrupulous care. Chloralose (0·1 gm/kg.) was used orally as the anaesthetic in all cases and artificial respiration at a constant rate was maintained throughout the experiment. The activity of an unknown sample was determined by comparing its activity with that of the standard tincture obtained from the International Standard Digitalis powder (1936) supplied by the National Institute of Medical Research, London. Potency ranging between 80 and 120 percent of the standard has been taken to be within the limits of allowable variation of biological standardization and preparations with this potency have been declared as of proper strength. Only those samples which do not come within this range have been declared as of poor quality and not suited for therapeutic use.

THE CHOLERA DANGER.

USELESS VACCINES ON THE MARKET. NECESSITY FOR USING GENUINE VACCINE.

In 1938 the attacks and deaths from cholera in British India, as recorded in the office of the Public Health Commissioner, totalled approxi-

mately 3,23,243 and 1,58,010 respectively. The worst affected provinces were the United Provinces with 70,000 cases and 34,000 deaths, the Central Provinces with 94,000 cases and 43,000 deaths and Bengal with 86,000 cases and 45,000 deaths. The Punjab reported 8,600 cases and 4,600 deaths during the same period.

This grave incidence of cholera has been a matter of serious concern to the country and the subject came under exhaustive discussion at the Medical Research Conference held in Delhi in December and at the second meeting of the Central Advisory Board of Health in Madras in January.

Recent research work under the Indian Research Fund Association has thrown new light on the nature of the cholera organism. It has been shown that there are in nature many organisms which resemble the cholera organism but do not cause the disease. The value of inoculation against cholera is now generally recognised and the number of inoculations carried out in India shows a large regular increase over the last few years. It is, therefore, of the greatest importance that the vaccine used for protection against cholera should be prepared from the genuine cholera organism.

The Central Advisory Board of Health at its meeting in January recommended that this fact should be made widely known throughout India, not alone to health officers, medical officers and private medical practitioners, but also to the general public.

The Cholera Advisory Committee of the Indian Research Fund Association considered the question of the sources of supply and the nature of anti-cholera vaccines used in the several provinces in India. The vaccines used are obtained from (*a*) laboratories under the control of the Central and Provincial Governments or their Public Health Departments, and (*b*) commercial firms.

Examinations carried out on Cholera vaccines available in the market in India during the last 18 months have indicated that in certain cases these vaccines were not prepared from the strains of the true organism. The view of the Cholera Advisory Committee, which was accepted by the Medical Research Conference, is that no protection against cholera can be expected from the use of such vaccines.

It is, however, by no means certain that those engaged in the manufacture of anti-cholera vaccines are all sufficiently acquainted with recent bacteriological findings. It would be disastrous if the people of India lost their belief in the value of anti-cholera inoculations. It is therefore the

duty of all health officers, medical officers and private practitioners to ensure that the cholera vaccine they use possesses a high protective value. With that object, they should assure themselves that it is manufactured from a suitable strain of organism in accordance with the recommendation made in 1936 by the Cholera Advisory Committee regarding the technique of manufacture of cholera vaccine and the strains to be used.

For the purpose of ensuring that the vaccine is made from correct strains it is recommended that those employed in the manufacture of the vaccine in India should be strains tested and issued by certain specified laboratories which have been continuously engaged in the study of the cholera vibrio. The Directors of the Central Research Institute, Kasauli, the Calcutta School of Tropical Medicine and the King Institute, Guindy, have expressed their willingness to issue suitable strains to all laboratories, including those of commercial firms, for this purpose.

Copies of the recommendations made by the Cholera Advisory Committee in 1936 are available on application from the Office of the Public Health Commissioner with the Government of India.

NOTICE.

CAMERON PRIZE FOR PROF. DOMAGK.

At a meeting of the Court of Edinburgh University the Senatus reported that the Cameron prize for 1939 had been awarded to Dr. Gerhard Domagk, Institute for Experimental Pathology and Bacteriology, I. G. Farbenindustrie, Elberfeld, Germany, in recognition of his discoveries—the well-known 'Prontosil'—which initiated the treatment of diseases of bacterial origin by compounds belonging to the sulphonamide group.

The Cameron Prize is awarded to a person who, in the opinion of the Senatus has in the five years immediately preceding the award made any highly important and valuable addition to practical therapeutics.

CORRESPONDENCE

A NATIONAL LANGUAGE FOR INDIA.

Sir,

My attention was drawn to the comment in the Lancet (Feb. 18 1939, P : 429), on an article of mine on "Is a national language necessary for scientific education and expression in India?" published in the journal of South Indian Medicine, November, 1938.

I regret to note, the commentator, has missed the point of my article and only explains the inherent difficulties, and imputes unworthy motives as, when he says "He seems to be one of those who believe in the Aryan myth".

In the first place, mere enumeration of difficulties such as the millions speaking the Dravidian tongues, is no answer to my estimate of the national craving for a greater and united India, in which a lingua franca is absolutely necessary for a Federal state. We do not want to create an Europe in India, an Europe, the home of multitudinous nations, big, small and insignificant, and an Europe of as many tongues, as there are in India. It is sheer "mid-summer night's dream" to even think of making English the national language of India, when in spite of the remark of Slater that "The extent to which English has already become the language of South India is amazing", the South Indian masses, nearly 95% of them, do not know English, in spite of two centuries of English contact. Let any one address a mass meeting in English, in the city of Madras, the citadel of the English Language, perhaps in the whole of India, without any translators, he will find that he is addressing a minority of High School and College students, clerks, etc. In the villages, perhaps in a population of a thousand or more, one may find one or two, knowing some understandable English. Hitherto the English officials, I mean the majority of them, have been living an exotic life, and no wonder, the results linguistically, are practically insignificant. But thanks to numerous voluntary organisations, especially the "Dakshina Bharath Hindi Prachar Sabha", and the policy of the Congress Government at Madras, Hindustani has already made a headway and in a decade, if the progress is steady, Hindustani will take root and stay for ever, in South India.

Secondly let me state categorically, that a modern progressive Indian, has absolutely no myth about him. Throughout the epochs of Indian History, Indian practice has been toleration and assimilation. Compared to the colour prejudice in South and East Africa and Herr Hitler's own

untenable theories, India, especially the educated India, has no "myth" complexes. India is suffering from too much of political and material religiosity. The so-called official religions are prostituted for material purposes. A future India will perhaps be much happier, without the irrational political religions.

But I am glad that the commentator realizes my sincerity when I wrote that "Of all the foreign languages from the scientists' point of view, English is the best". A language of Shakespeare and Shaw can stand on its merits alone, irrespective of the political needs of India and the world.

I am,

Yours sincerely,

E. S. GOPALAN.

COIMBATORE,
10—5—1939.

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LEPROSY

CHAULMOOGRADINE

While Chaulmoogradine tablets may not adequately replace injection treatment of Leprosy, they are nevertheless very useful for reinforcing injection of chaulmoogra preparations, as a maintenance treatment between courses of injections and as a precautionary treatment against relapse following the cessation of injections.

Relapse often occurs through treatment being stopped too soon. Sometimes a complicating disease may suppress the cellular reaction to the B. Leprae, as a result of which the disease may appear to be arrested, but actually is only quiescent.

The administration of Chaulmoogradine tablets at the cessation of injection treatment will serve to maintain resistance to the B. Leprae, and reduce the danger of relapse.

The tablets are composed of salts of the total unsaturated fatty acids present in chaulmoogra oil; they are convenient to take and remarkably free from any deleterious action on the stomach.

COMPOSITION: Gluten coated tablets each containing ½ gram of the sodium salts of Chaulmoogric and Hydnocarpic acids.

ADVANTAGE: The gluten coating prevents gastric disturbances.

DOSE: One tablet three times a day, which may be increased to six tablets per day in some cases.

PACKING: Bottles of 100 tablets.

PHARMASOL CHAULMOOGRA

COMPOSITION: A colloidal preparation of Chaulmoogra oil.

Strengths	Ampoules	Vials.
0·1 per cent.	2 cc and 5 cc	25 cc
0·2 " "	2 cc	25 cc
0·5 " "	2 cc	25 cc
1·0 " "		25 cc
2·5 " "		25 cc

DOSAGE: Begin with ½ to 2 cc of 0·1 per cent every 2nd day. Gradually increase the dose and interval till 5 cc or more of 1·0 per cent or 2·5 per cent is given once a week.

METHODS: Intramuscular or intravenous as convenient.

ADVANTAGES: No venous occlusions.

The Anglo-French Drug Co. (Estn.) Ltd.,

P. O. Box 460 — BOMBAY.

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SERVICE AND PRIVATE PRACTICE.

The Government have at last passed orders restricting the privilege of private practice which has been enjoyed by the members of the various Medical Services. From the nature of the constitution which governs this country, the Indian Medical Service officers do not suffer from this restraint. This is certainly anamolous. But in reality whether the Indian Medical Service officers indulge in a large amount of private practice depends entirely on the attitude of the medical practitioners. At present the subordinate members of the medical services often seek their help in the case of private patients under their care. In some places, chiefly in cities like Madras, some private practitioners are responsible for a good portion of the consulting work which these I. M. S. officers take. The subordinate and Provincial Medical Services are in future not to undertake such work. They are expected to deal with emergencies and cases referred to them by other medical practitioners. Therefore the volume of work which the senior officers of the I. M. S. obtained from these medical men should stop. And if the contention of the medical practitioners that their practice was hindered by service men has any foundation, there should be no great complaint in future, since the consultation work which these I. M. S. officers would get through the practitioners themselves cannot be very great. Therefore the fact that the I. M. S. officers are not statutorily prevented from practising is not a very serious handicap.

Coming to the restrictions on the members of the Provincial and Subordinate Medical services. We have already dealt with this question in a previous issue. And we have reason to believe that the sentiments expressed in that article have the approval of a large number of members of the Provincial Medical Services. But now that the Government has definitely passed orders it is necessary to see how far these new rules would help the medical profession as a whole. It is true that these rules are officially to come into force with the beginning of the next year. But we are sure that the members of the various services would behave as if the new rules are already in the working.

The seven months' time that has been allowed, we take it is just to give sufficient time for those who may be engaged in such duties as Insurance doctors or those engaged by firms to look after the health of their staff, school medical inspectors etc. Such people, and we think they are not very many do need a little time before arrangements could be made by the various bodies to make other arrangements. We have heard serious complaints from some of these doctors that their earning would be curtailed. This is only true in the case of a lucky few who are in certain central institutions. Even here, if these doctors in charge of special departments would be content to be consultants in the strictly honourable sense, there is no reason why they should suffer pecuniarly. Only those who might have been abusing their position might lose. But the vast majority of these in service are scattered in the various Taluk and District Head-Quarters hospitals. Many of them do not have any private practice worth mentioning. And the few who are in certain favoured areas have already felt the effect of the increasing number of well qualified practitioners newly settled in these areas. On the whole, we consider that the new rules which restrict the private practice of service members of the profession would not be felt by them very seriously, the more so as the reasonable seniors among them now realise that they have a duty towards the less fortunately placed private practitioners.

The main purpose of these rules is not to harm the members in the services. But it is chiefly to encourage the increasing number of private practitioners. The value of the measure therefore depends on the extent to which it succeeds in the latter object. Its success depends on many factors, chiefly human. The service members should willingly abide by the spirit, more than the letter of the rule. The practitioners should realise, not only their privileges, but also their duties. There is in such cases a temptation for some practitioners to work in collusion with a government officer, who may not take a literal view of the rules, to the disadvantage of other practitioners in the area. And above all, the public should appreciate the advantages and need for the recent regulations. These are conditions very essential to achieve even partial success of the scheme. It must therefore be very obvious to our readers how very easily the rules may be ignored by one or more of the various persons concerned.

We do not look for any immediate result from these rules. But the very fact that such rules exist, is sure to bring about a change in the existing state of medical practice at no distant future.